No. 1

CHARLES E. SMITH, PETR LÁNSKÝ and TE-HSIN LUNG. Cycle-Time and Residence-Time Density Approximations in a Stochastic Model for Circulatory Transport 1

E. SIROT and V. KŘIVAN. Adaptive Superparasitism and Host–Parasitoid Dynamics 23

DUMITRU POPESCU, LIVIU MOVILEANU, GHEORGHE VICTOR and GRIGORE TURCU. Stability and Instability Properties of Aggregation of Single Chain Amphiphiles into Binary Mixtures 43

RICHARD A. REYMENT. Evolution of Shape in Oligocene and Miocene *Notocarinovalva* (Ostracoda, Crustacea): A Multivariate Statistical Study 63

D. P. GAVER, P. A. JACOBS, R. L. CARPENTER and J. G. BURKHART. A Mathematical Model for Intracellular Effects of Toxins on DNA Adduction and Repair 89

R. W. VAN KIRK and M. A. LEWIS. Integrodifference Models for Persistence in Fragmented Habitats 107

KUNIHIKO KANEKO and TETSUYA YOMO. Isologous Diversification: A Theory of Cell Differentiation 139

Book Reviews. LARS FOLKE OLSEN on *Biochemical Oscillations and Cellular Rhythms: The Molecular Bases of Periodic and Chaotic Behaviour*, by Albert Goldbeter (197); DAVID B. FOGEL on *An Introduction to Genetic Algorithms*, by Melanie Mitchell (199) 197

No. 2

M. I. S. COSTA and J. L. BOLDRINI. Chemotherapeutic Treatments: A Study of the Interplay among Drug Resistance, Toxicity and Recuperation from Side Effects 205

SETH MICHELSON and JOHN T. LEITH. Positive Feedback and Angiogenesis in Tumor Growth Control 233

A. L. JENSEN. Matrix Population Model with Density-Dependent Recruitment for Assessment of Age-Structured Wildlife Populations 255

R. LEFEVER and O. LEJEUNE. On the Origin of Tiger Bush 263

MARIUSZ KACZMAREK, RAVI P. SUBRAMANIAM and SAMUEL R. NEFF. The Hydromechanics of Hydrocephalus: Steady-State Solutions for Cylindrical Geometry 295

BING LIU and RAINER K. SACHS. A Two-Backbone Polymer Model for Interphase Chromosome Geometry 325

CHRISTIAN REIDYS, PETER F. STADLER and PETER SCHUSTER. Generic Properties of Combinatory Maps: Neutral Networks of RNA Secondary Structures 339

Book Reviews. G. BARD ERMENTROUT on *Principles of Brain Functioning: A Synergetic Approach to Brain Activity, Behavior, and Cognition*, by H. Haken and *Dynamic Patterns: The Self-Organization of Brain and Behavior*, by J. A. S. Kelso (399); SVETLOZAR T. RACHEV on *Stochastic Models of Tumor Latency and Their Biostatistical Applications*, by A. Yu. Yakovlev and A. D. Tsodikov (404) 399

Erratum 407

No. 3

NICHOLAS A. M. MONK. The Community Effect and Ectoderm–Mesoderm Interaction in *Xenopus* Muscle Differentiation 409

VEIJO KAITALA, MIKKO HEINO and WAYNE M. GETZ. Host–Parasite Dynamics and the Evolution of Host Immunity and Parasite Fecundity Strategies 427

ALAN M. WEINSTEIN. Dynamics of Cellular Homeostasis: Recovery Time for a Perturbation from Equilibrium 451

JOSEPH I. NAUS and KE-NING SHENG. Matching among Multiple Random Sequences 483

MICHAEL DOEBELI and GRAEME D. RUXTON. Controlling Spatial Chaos in Metapopulations with Long-Range Dispersal 497

RAFAEL A. BARRIO, LIMEI ZHANG and PHILIP K. MAINI. Hierarchically Coupled Ultradian Oscillators Generating Robust Circadian Rhythms 517

BARD ERMENTROUT and MARK LEWIS. Pattern Formation in Systems with One Spatially Distributed Species 533

FRANK VAN DEN BOSCH and WILFRIED GABRIEL. Cannibalism in an Age-Structured Predator–Prey System 551

PETR LÁNSKÝ, JANA VELÍŠKOVÁ and LIBOR VELÍŠEK. An Indirect Method for Absorption Rate Estimation: Flurothyl-Induced Seizures 569

CHRIS TUFFLEY and MIKE STEEL. Links between Maximum Likelihood and Maximum Parsimony under a Simple Model of Site Substitution 581

No. 4

PETER WHITE and JAMES POWELL. Phase Transition from Environmental to Dynamic Determinism in Mountain Pine Beetle Attack 609

MILOJE M. RAKOČEVIĆ. Two Classes of the Aminoacyl-tRNA Synthetases in Correspondence with the Codon Path Cube 645

V. L. ALEXEYEV and A. P. LEVICH. A Search for Maximum Species Abundances in Ecological Communities under Conditional Diversity Optimization 649

MATS GYLLENBERG, ILKKA HANSKI and TORSTEN LINDSTRÖM. Continuous versus Discrete Single Species Population Models with Adjustable Reproductive Strategies 679

M. I. S. COSTA and J. L. BOLDRINI. Conflicting Objectives in Chemotherapy with Drug Resistance 707

OLE LUND, OLE SØGAARD LUND, GREGERS GRAM, SUSANNE DAM NIELSEN, KRISTIAN SCHØNNING, JENS OLE NIELSEN, JOHN-ERIK STIG HANSEN and ERIK MOSEKILDE. Gene Therapy of T Helper Cells in HIV Infection: Mathematical Model of the Criteria for Clinical Effect 725

MICHA PELEG, MARK D. NORMAND and EVI DAMRAU. Mathematical Interpretation of Dose–Response Curves 747

DENISE E. KIRSCHNER and G. F. WEBB. Understanding Drug Resistance for Monotherapy Treatment of HIV Infection 763

Book Reviews. FRANK HOPPENSTEADT on *The Dynamics of Small Neural Populations*, by John Milton (787); HAROLD M. HASTINGS on *Fractal Geometry in Biological Systems: An Analytical Approach*, edited by Phillip M. Iannacone and Mustafa Khokha (791); MICHAEL MESTERTON-GIBBONS on *Control and Game-Theoretic Models of the Environment*, edited by Carlo Carraro and Jerzy A. Filar (794); K. A. JANE WHITE on *Population Biology: Concepts and Models*, by Alan Hastings (798); HENRY D. I. ABARBANEL on *Controlling Chaos: Theoretical and Practical Methods in Non-Linear Dynamics*, by Tomasz Kapitaniak (801); MICHAEL G. NEUBERT on *The Lure of Modern Science: Fractal Thinking*, by Bruce J. West and Bill Deering (802); MARK PERNAROWSKI on *Introduction to Perturbation Methods*, by M. H. Holmes (806) 787

No. 5

VLASTIMIL KŘIVAN. Dynamical Consequences of Optimal Host Feeding on Host–Parasitoid Population Dynamics 809

JESUS GÁLVEZ, FRANCISCO LAJARIN and PILAR GARCÍA-PEÑARRUBIA. Mathematical Modeling of Adhesion of Bacteria to Host Cell Lines 833

JESUS GÁLVEZ, FRANCISCO LAJARIN and PILAR GARCÍA-PEÑARRUBIA. Penetration of Host Cell Lines by Bacteria. Characteristics of the Process of Intracellular Bacterial Infection 857

BARBARA BITTNER, SEBASTIAN BONHOEFFER and MARTIN A. NOWAK. Virus Load and Antigenic Diversity 881

BONAWENTURA KOCHEL and WALDEMAR SAJEWICZ. A New Measure of Xenobiotic Toxicity to the First-Line Human Defence System from the Time-Resolved Phagocyte Luminescence .. 897

MICHAEL WEISS, CHRISTINA STEDTLER and MICHAEL S. ROBERTS. On the Validity of the Dispersion Model of Hepatic Drug Elimination when Intravascular Transit Time Densities Are Long-Tailed. 911

M. BROOM, C. CANNINGS and G. T. VICKERS. Multi-Player Matrix Games 931

C. ZOPPOU, S. I. BARRY and G. N. MERCER. Dynamics of Human Milk Extraction: A Comparative Study of Breast Feeding and Breast Pumping 953

YANNIS ALMIRANTIS and ASTERO PROVATA. The "Clustered Structure" of the Purines/Pyrimidines Distribution in DNA Distinguishes Systematically between Coding and Non-Coding Sequences 975

HILMI DEMIRAY. The Effect of Shear Stress on Solitary Waves in Arteries. 993

Book Reviews: GORDON A. FOX on *Plant Allometry: The Scaling of Form and Process,* by Karl Niklas (1013); GREGG HARTVIGSEN on *Metapopulation Biology: Ecology, Genetics, and Evolution,* by Ilkka A. Hanski and Michael E. Gilpin (1016); W. M. SCHAFFER on *Global Dynamical Properties of Lotka-Volterra Systems,* by Y. Takeuchi (1019); JONATHAN A. SHERRATT on *A Survey of Models for Tumor-Immune System Dynamics,* by John A. Adam and Nicola Bellomo (1023); R. V. O'NEILL on *Theoretical Ecosystem Ecology: Understanding Element Cycles,* by Göran I. Ågren and Ernesto Bosatta (1024); ATHEL CORNISH-BOWDEN on *The Regulation of Cellular Systems,* by Reinhart Heinrich and Stefan Schuster (1026). 1013

No. 6

A. SUCIU, G. CIVELEKOGLU, Y. TARDY and J.-J. MEISTER. Model for the Alignment of Actin Filaments in Endothelial Cells Subjected to Fluid Shear Stress 1029

R. HENERY, W. G. GIBSON and M. R. BENNETT. Quantal Currents and Potential in the Three-Dimensional Anisotropic Bidomain Model of Smooth Muscle 1047

PAUL D. DALE, JONATHAN A. SHERRATT and PHILIP K. MAINI. Role of Fibroblast Migration in Collagen Fiber Formation during Fetal and Adult Dermal Wound Healing 1077

J. E. TRUSCOTT, C. R. WEBB and C. A. GILLIGAN. Asymptotic Analysis of an Epidemic Model with Primary and Secondary Infection 1101

M. SALEET JAFRI and JOEL KEIZER. Agonist-Induced Calcium Waves in Oscillatory Cells: A Biological Example of Burgers' Equation 1125

ZOLTÁN VARGA and EÖRS SZATHMÁRY. An Extremum Principle for Parabolic Competition 1145

ZUZANA KNUDSEN, A. V. HOLDEN and J. BRINDLEY. Qualitative Modeling of Mechanoelectrical Feedback in a Ventricular Cell 1155

NICHOLAS A. M. MONK. Note: Cell Communities and Robustness in Development 1183

Book Reviews: JAMES SNEYD on *Cellular Biophysics,* by Thomas F. Weiss (1191); MARK A. J. CHAPLAIN on *Case Studies in Mathematical Modelling: Ecology, Physiology and Cell Biology,* edited by Hans G. Othmer, Fred Adler, Mark Lewis and John Dallon (1193); EDWARD F. CONNOR on *Null Models in Ecology,* by Nicholas J. Gotelli and Gary R. Graves (1195); STEPHEN CANTRELL on *The Theory and Applications of Reaction-Diffusion Equations: Patterns and Waves,* by Peter Grindrod (1199) 1191

Volume Contents

Author Index

Subject Index